

Effective Risk Management Tools for “Green” Projects in Eastern European, Central European, and CIS Countries

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There are Vast Renewable Resources in the Transitional Economies

- The transitional economies have vast reserves of renewable energy:
 - Bulgaria has just about the same wind resource potential as Germany, yet Germany is a world leader in wind power and Bulgaria has virtually no wind power
 - In Russia, during 2000, only 3% of total primary energy supply was based on renewable energy
 - Ukraine has vast wind reserves
 - Ukraine and Russia have vast biomass reserves
 - Russia and Ukraine have huge CBM/CMM resources

Ukraine as an Example

- Ukraine has great potential for cost-effective GHG emission abatement through energy efficiency and the use of renewable resources – biomass, wind, CBM/CMM
- During the period 2002-2012, 1,500 Mt CO₂ can be reduced at costs equal or smaller than \$10/tCO₂ and 1,000 Mt CO₂ are in fact no-cost options
- Approximately 1/3 of the total potential is directly related to energy savings
- There are many no-cost renewable options too

Russia as an Example

	Mtoe	Share (%)
Total	614	
Natural Gas	319	52
Oil and Oil products	130	21
Coal	111	18
Nuclear	34	6
Renewable energy	21	3

The Russian Energy Market

- In 2000, only some 3% of its total primary energy supply was based on renewable energy
- 2% was hydro and less than 1% all other forms
- Russia's energy mix is dominated by natural gas, especially for electricity generation
- In 2000, over 40% of the electricity fuel mix was gas-fired; another quarter was coal- or oil-fired
- Kuzbass is just one example of CBM/CMM opportunities

Potential of Renewable Energy Sources in Russia

(million tons of coal equivalent)

Resource	Gross potential	Technical potential	Economic potential
Small Hydropower	360.4	124.6	65.2
Geothermal Energy			115.0
Biomass Energy	10×10^3	53	35
Wind Energy	26×10^3	2000	10.0
Solar Energy	2.3×10^6	2300	12.5
Low Potential Heat	525	115	36
Total Renewable Energy Sources	2.34×10^6	4593.0	273.5

One estimate of renewable energy potential suggests that it might be as high as **30%** of total primary energy supply

Hydro Resources

- Russia has more than two million rivers, which stretch for 3 million km, dumping more than 4,000 km³ of water annually
- Russia's hydropower economic potential, which takes into account its impact on economic development, economic efficiency, and ecological and other factors, is estimated to be 1,015,000 GWh/year
- In 1999, Russian electricity generation was 846,000 GWh
- Even if the most conservative estimate of small hydro resources was exploited, i.e. 80,000 GWh/year, some 9.5% of all Russian electricity could be potentially generated from this source

Four Types of Green Projects are Common in This Region

1. Energy efficiency
2. Renewable energy
3. Cogeneration
4. District heating upgrades

What risks are associated with these projects?

We Cannot Avoid Discussing JI

- Special risks
 - Price
 - Quantity
 - Ratification
 - Utility of reductions
 - COP/MOP

Energy Efficiency Projects

- The greatest risk in the project development and operation phases
- Many energy efficiency providers and energy users that seek to borrow money for energy efficiency projects are small and poorly capitalized, and hence represent poor credit risks
- Even when the project is funded and is operational, there is the risk that energy saving will not materialize and persist

Cogeneration and Renewable Energy Projects

- Significant risks during development and construction phases
- During the development phase, both types of projects must secure the necessary consents and permits to allow the project to proceed
- Construction costs might be higher than expected or construction will be delayed
- Credit risk is again a prime concern for cogeneration and renewable projects
- Operation risk is also a concern

District Heating, Cogeneration, and Renewable Energy Projects

- Face “off-take” risks during the operation phase of a project
- Often, off-takers in emerging economies are not commercially viable

Allocate Risks Properly

- Risk should be allocated to those organizations that can best manage risks
- Project sponsors and contractors often have strong technical expertise and are best able to manage the technical risks of project completion, implementation, operation, and performance
- Governments can usually influence a country's political and economic environment, therefore governments are best able to manage foreign exchange, inflation, and political risks

Manage Risks Through Project Development

- There is no substitute for good project development
- Project sponsors need to understand and comply with host country consent and permit requirements before they seek finance
- Project sponsors must be creditworthy themselves or obtain the support of a financially strong public or private sector entity
- Project sponsors should choose experienced contractors and employ commercially proven technologies

Specific Types of Risk

- Specific project risks entail specific development approaches:
 - Because renewable energy projects usually cannot be moved, they must have a large, proven source of energy
 - Cogeneration projects should have strong legally enforceable fuel contracts, ideally with commercially known entities
 - Energy efficiency projects need high rates of return and therefore must often generate enough energy savings to repay investments within 3-5 years

Traditional Risk Management Mechanisms

- Even the most well thought out and managed project requires legal, contractual, and other risk management mechanisms that reduce risk exposure to lenders
- Most JI projects can purchase political and commercial risk insurance from private companies, multilateral and bilateral institutions, and export credit agencies
 - Energy efficiency projects can use reserve funds to cover loan defaults or late payments
 - Cogeneration and renewable energy projects can obtain host government guarantees on energy payments

Political Risks

	Project company	Insurance company	Other contractors	Host government
Political support risks				
Taxation risks				
Expropriation/nationalization risks				
Forced buy-out risks				
Cancellation of concession				
Import/export restrictions				
Failure to obtain or renew approvals				

Country Commercial Risks

	Project company	Insurance company	Other contractors	Host government
Currency inconvertibility risks				
Foreign exchange risks				
Devaluation risks				
Inflation risks				
Interest rate risk				

Country Legal Risks

	Project company	Insurance company	Other contractors	Host government
Changes in laws and regulations				
Law enforcement risk				
Delays in calculating compensation				

Operating Risks

	Project company	Insurance company	Other contractors	Host Gov.
Associated infrastructure risks				
Technical risks				
Demand risk (volume and price)				
Supply risk (volume and price)				
Cost escalation risks				
Management risks				
Force majeure risk				
Loss or damage to project facilities				
Liability risk				

Construction/Completion Risks

	Project company	Insurance company	Other contractors	Host government
Delay risk				
Cost overrun risks				
Re-performance risk				
Completion risk				
<i>Force majeure</i> risk				
Loss or damage to work				
Liability risk				

Tools for Managing Risks

- ✓ Monte Carlo analysis
- ✓ Separating risks and uncertainties
- ✓ Local partners
- ✓ Programs, not projects
- ✓ Insurance

Conclusion

- ✓ Successful renewable and energy efficiency projects involve isolating and quantifying risks
- ✓ Risk management cannot be added-on; it should be built into planning

For further information:

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